Project A-619
Technical Report No. 6

# ASPHALT AND VINYL ASBESTOS FLOOR TILE

## A Manufacturing Opportunity in Carroll County, Georgia

by
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Prepared under the auspices of the Area Redevelopment Administration
U. S. Department of Commerce
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## Foreword

The large annual market which is now served by manufacturers outside the Southeast provides an attractive branch plant opportunity for manufacturers of asphalt and vinyl asbestos floor tile.

This report was prepared as part of the second year's work of an Area Redevelopment Administration "demonstration" project. It is the second of the studies to identify a particular product that can profitably be made in the county. The first dealt with wooden pallets, which are now being made by a Carrollton firm.

Other analyses in process will deal with custom fabrication of stainless steel food service equipment and the manufacture of plastic products. Work is also in process with five established firms in the county who are being provided with technical assistance designed to strengthen, expand, or diversify their present manufacturing operations. Previous studies dealt with industrial sites, retail and wholesale trade, park and recreational facilities, manufacturing operations established in the county, and audits of the basic economic resources of the seven incorporated cities in the county.

The over-all project is designed to demonstrate the economic results which can be derived from a three-year research-technical assistance-action program. Substantial results achieved during the first and second years demonstrate the practicality of the approach being used.

Comments or questions regarding this particular report or the over-all study are invited.

Kenneth C. Wagner, Chief
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Summary

The annual market for asphalt and vinyl asbestos floor tile in the six southeastern states[1/] was approximately $17 million in 1961. It is estimated that consumption in the region will reach $23 million in 1968.

None of the asphalt and vinyl asbestos floor tile used in the Southeast is manufactured in the Southeast. Major producers are located in the Northeast, Midwest, and Southwest, and finished products are shipped into the area at a freight cost of almost one cent per tile.

A Carroll County plant manufacturing asphalt and vinyl asbestos tile can realize greater savings in selling to the southeastern market than any existing plants because of the following factors:

1. Proximity to Market. Carrollton, the county seat of Carroll County, is within 50 miles of Atlanta, the principal wholesale center for floor coverings in the Southeast with an annual wholesale sales volume of $34 million (42% of the wholesale sales in the entire Southeast).

2. Lower Freight Costs. A Carrollton manufacturer can deliver $2 million worth of asphalt and vinyl asbestos tile to distributors in the Southeast at net freight savings of $47,000 to $104,000 over present suppliers.

3. Lower Labor Costs. The production labor necessary to manufacture $2 million worth of tile would cost $60,000 to $82,000 less in Georgia than in Illinois, New York, or Louisiana.

Additional advantages of a Carroll County location for an asphalt and vinyl asbestos floor tile plant are first morning delivery service to the southeastern market, an ample supply of good quality labor, a record of low work stoppage, and the availability of financing and assistance from the Area Redevelopment Administration.

1/ Alabama, Florida, Georgia, North Carolina, South Carolina, and Tennessee.

## INTRODUCTION

This study is intended to enumerate and evaluate the advantages of manufacturing asphalt and vinyl asbestos tile in Carroll County, Georgia, and to compare these advantages with those of plants presently manufacturing floor tile for consumption in the Southeast. The report is directed toward manufacturers who supply asphalt and vinyl asbestos tile to the southeastern states.

Although this study is focused on Carroll County, Carrollton is used as an illustrative location because its low labor rates and good "labor climate" are representative of the county as a whole, and complete freight rates from Carrollton are available for comparison with other cities.

The asphalt and vinyl asbestos floor tile industry is composed of a small number of multi-plant companies located in one or more of four sections of the U. S., all of which service a national market. (See Map 1.) The major producers in the industry are:

American Biltrite Rubber Company, Inc., Chelsea, Massachusetts
Armstrong Cork Company, Lancaster, Pennsylvania
Congoleum-Nairn, Inc., Kearny, New Jersey
Flintkote Company, New York, New York
The B. F. Goodrich Company, Akron, Ohio
Johns-Manville Corporation, New York, New York
Kentile, Inc., Brooklyn, New York
Ruberoid Company, New York, New York
Uvalde Rock Asphalt Company, San Antonio, Texas

Of these nine companies presently manufacturing asphalt and vinyl asbestos tile, four do not have a plant south of New Jersey or Illinois and two others have none east of Texas.

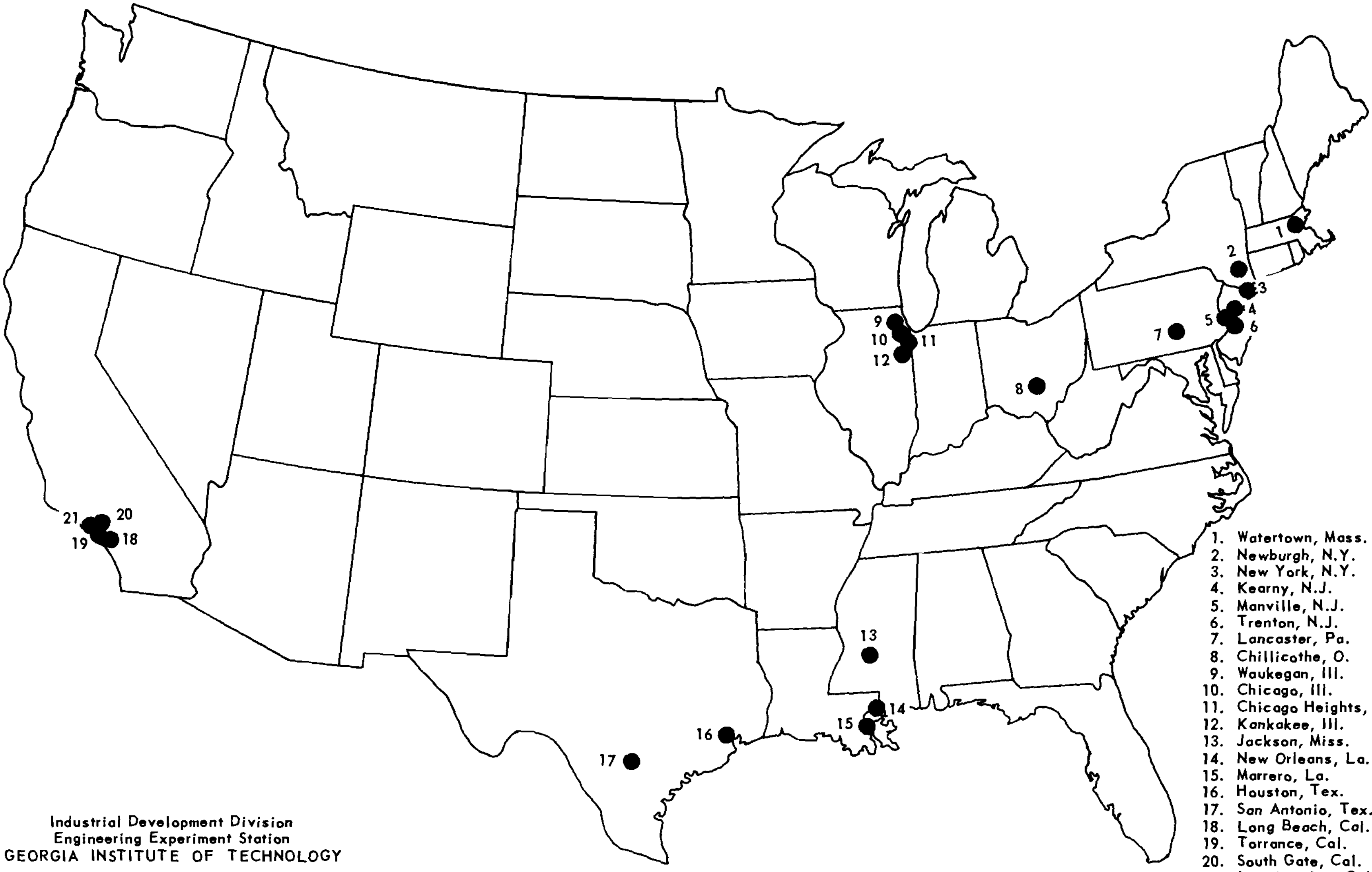
Tiles are priced f.o.b. manufacturing plants with freight equalized from all producing cities.

There is a total absence of price competition among manufacturers. Major competitive efforts involve product design and advertising.

Distribution follows a straight-line product flow from the manufacturer to the wholesaler or large industrial builder, to the retailer, and finally to the consumer or small builder.

MAP 1

LOCATIONS OF PLANTS MANUFACTURING ASPHALT AND VINYL ASBESTOS FLOOR TILE




1. Watertown, Mass.
2. Newburgh, N.Y.
3. New York, N.Y.
4. Kearny, N.J.
5. Manville, N.J.
6. Trenton, N.J.
7. Lancaster, Pa.
8. Chillicothe, O.
9. Waukegan, Ill.
10. Chicago, Ill.
11. Chicago Heights, Ill.
12. Kankakee, Ill.
13. Jackson, Miss.
14. New Orleans, La.
15. Marrero, La.
16. Houston, Tex.
17. San Antonio, Tex.
18. Long Beach, Cal.
19. Torrance, Cal.
20. South Gate, Cal.
21. Los Angeles, Cal.

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## THE MARKETS

### National Market

More than $172 million worth of asphalt and vinyl asbestos tile was produced in the United States in 1961.[1/] This was a $29 million increase over the 1958 figure of $143 million.

Since the builder is the predominant buyer of floor coverings, it is not unexpected to find a high coefficient of correlation (0.90) between the consumption of hard surface floor coverings and the volume of residential and nonresidential building construction in the United States. (See Appendix 1.) A first-degree projection for building construction (Figure 1) indicates a national construction total of approximately $53 billion for 1968. If the consumption of hard surface floor coverings continues to account for approximately 0.43% of total building construction, as it did in 1961, it can be assumed that the national consumption of asphalt and vinyl asbestos floor tile in 1968 will be approximately $228 million.

### Southeastern Market[2/]

Asphalt and vinyl asbestos tile consumption in the Southeast is estimated by application of the very high correlation described above to construction in the Southeast. The estimate is supported by the amount of wholesale sales of floor coverings in the same area.

Consumption. The southeastern proportion of the valuation of authorized building permits issued (both private and public) in the United States has remained relatively constant for a number of years. The annual amounts and proportions are given in Table 1.

By once again using the high correlation between building construction and the consumption of asphalt and vinyl asbestos tile as an equating basis for the present southeastern market, a forecast can be made for the future market in the Southeast. Since building construction in the Southeast is approximately 10% of total construction in the U. S. (Table 1), it can be assumed that the southeastern market for asphalt and vinyl asbestos tile is

1/ U. S. Bureau of the Census, Annual Survey of Manufactures, 1961.

2/ For purposes of this study, the southeastern market includes the states of Alabama, Florida, Georgia, North Carolina, South Carolina, and Tennessee.

FIGURE 1

TREND OF RESIDENTIAL AND NONRESIDENTIAL BUILDING CONSTRUCTION IN THE U.S.

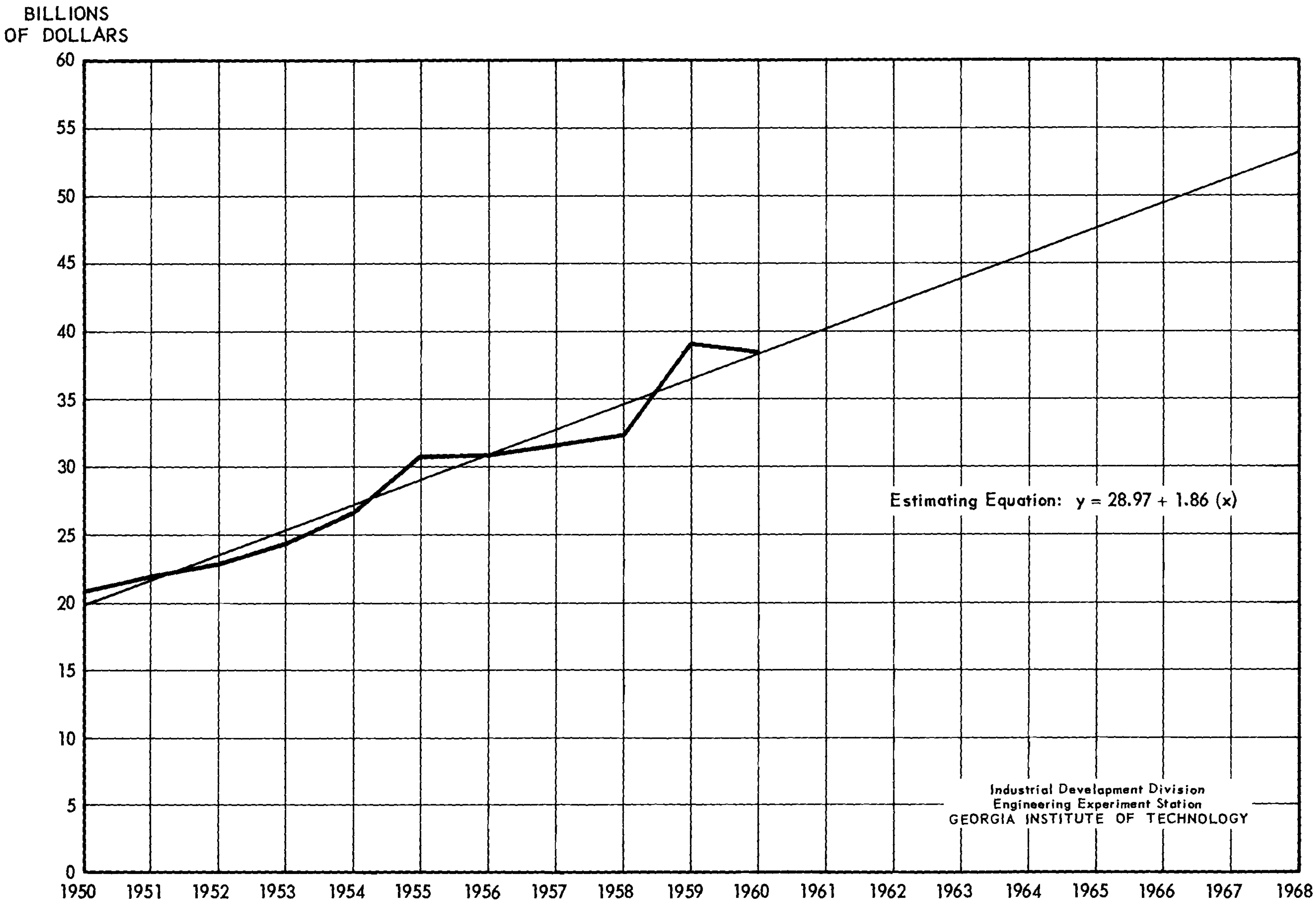


Table 1

TOTAL VALUE OF BUILDING PERMITS AUTHORIZED IN THE SOUTHEAST AS PERCENTAGE OF VALUE IN THE U. S., 1954-1961

| Year | Building Permits Authorized (in millions of dollars) Southeast | United States | Southeast as Per Cent of U.S. |
|---|---|---|---|
| 1954 | 1,513.9 | 16,485.0 | 9.2 |
| 1955 | 1,720.7 | 18,939.0 | 9.1 |
| 1956 | 1,769.4 | 18,787.8 | 9.4 |
| 1957 | 1,828.0 | 18,168.8 | 10.1 |
| 1958 | 2,047.2 | 20,089.9 | 10.2 |
| 1959 | 2,247.2 | 22,466.5 | 10.0 |
| 1960 | 2,983.2 | 17,833.4 | 10.5 |
| 1961 | 2,021.0 | 18,946.0 | 10.7 |

Note: Figures for 1954-1959 include private and public building permits, while those for 1960 and 1961 include only private permits.

Source: U. S. Bureau of the Census, Construction Review, 1955-1962.

approximately 10% of the national market. Based on this assumption, the market for asphalt and vinyl asbestos tile in the Southeast can be established at more than $17 million in 1961, and this market should increase to almost $23 million in 1968.

Wholesale Sales. The distribution of floor tile is accomplished through wholesalers of home furnishings and floor coverings. Only three areas in the United States wholesale more of these products than the Southeast. (See Map 2.) Each of these three areas has at least four asphalt and vinyl tile manufacturing plants; the Southeast has none. A fourth area, the Southwest, has five plants, yet wholesales less home furnishings and floor coverings than the southeastern states.

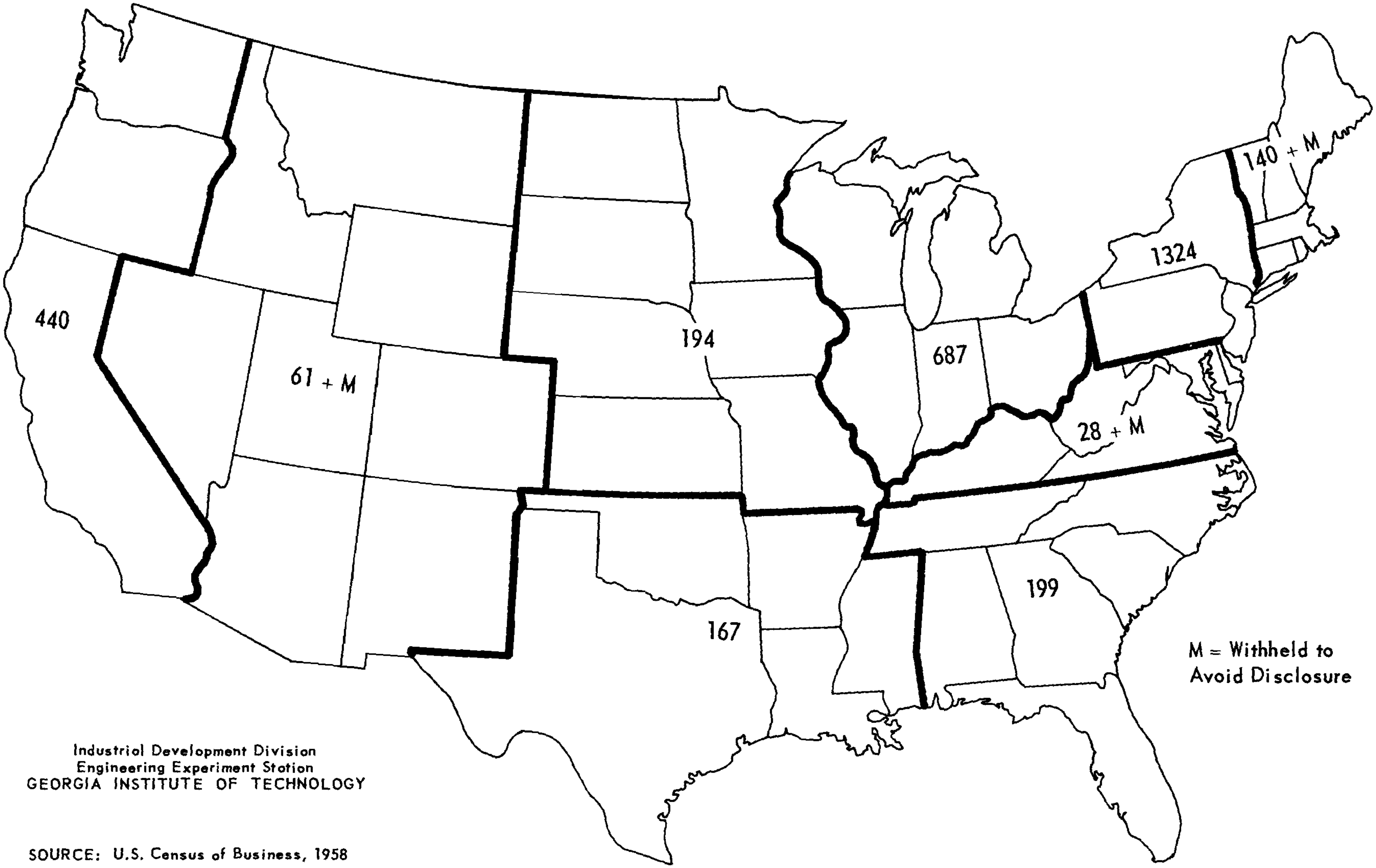
An attempt at calculating wholesale sales in the Southeast of floor coverings alone (Appendix 2) gives a figure of $78 million, or 12% of the national total. Although this figure is only an order-of-magnitude estimate and includes a quantity of carpeting, it compares favorably with the 10% obtained through the correlation between hard surface floor covering consumption and building construction.

Atlanta, located only 50 miles from the county seat of Carroll County, is one of the major wholesaling cities for floor coverings in the United States. In 1958, Atlanta ranked ninth nationally in annual wholesale sales of floor

## MAP 2

## REGIONAL WHOLESALE SALES OF HOME FURNISHINGS AND FLOOR COVERINGS

(In Millions of Dollars)

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SOURCE: U.S. Census of Business, 1958

coverings, selling only $4 million less than the sixth-ranking city. (See Table 2 and Map 3.)

With floor covering wholesale sales of almost $34 million in 1958 (more than four times the volume of any other city in the region), Atlanta is the primary distribution center for these products in the Southeast. (See Table 3 and Map 4.) Wholesale sales of floor coverings in metropolitan Atlanta are 42% of the entire southeastern total.

Table 2

ANNUAL WHOLESALE SALES OF FLOOR COVERINGS
IN PRINCIPAL U. S. CITIES

(in millions of dollars)

| City | Sales |
|---|---|
| New York | 371 |
| Chicago | 135 |
| Los Angeles | 90 |
| Philadelphia | 62 |
| San Francisco | 49 |
| Boston | 38 |
| Dallas | 37 |
| Cleveland | 35 |
| ATLANTA | 34 |

Source: U. S. Bureau of the Census, 1958 Census of Business -- Wholesale Trade

Table 3

ANNUAL WHOLESALE SALES OF FLOOR COVERINGS
IN PRINCIPAL SOUTHEASTERN CITIES

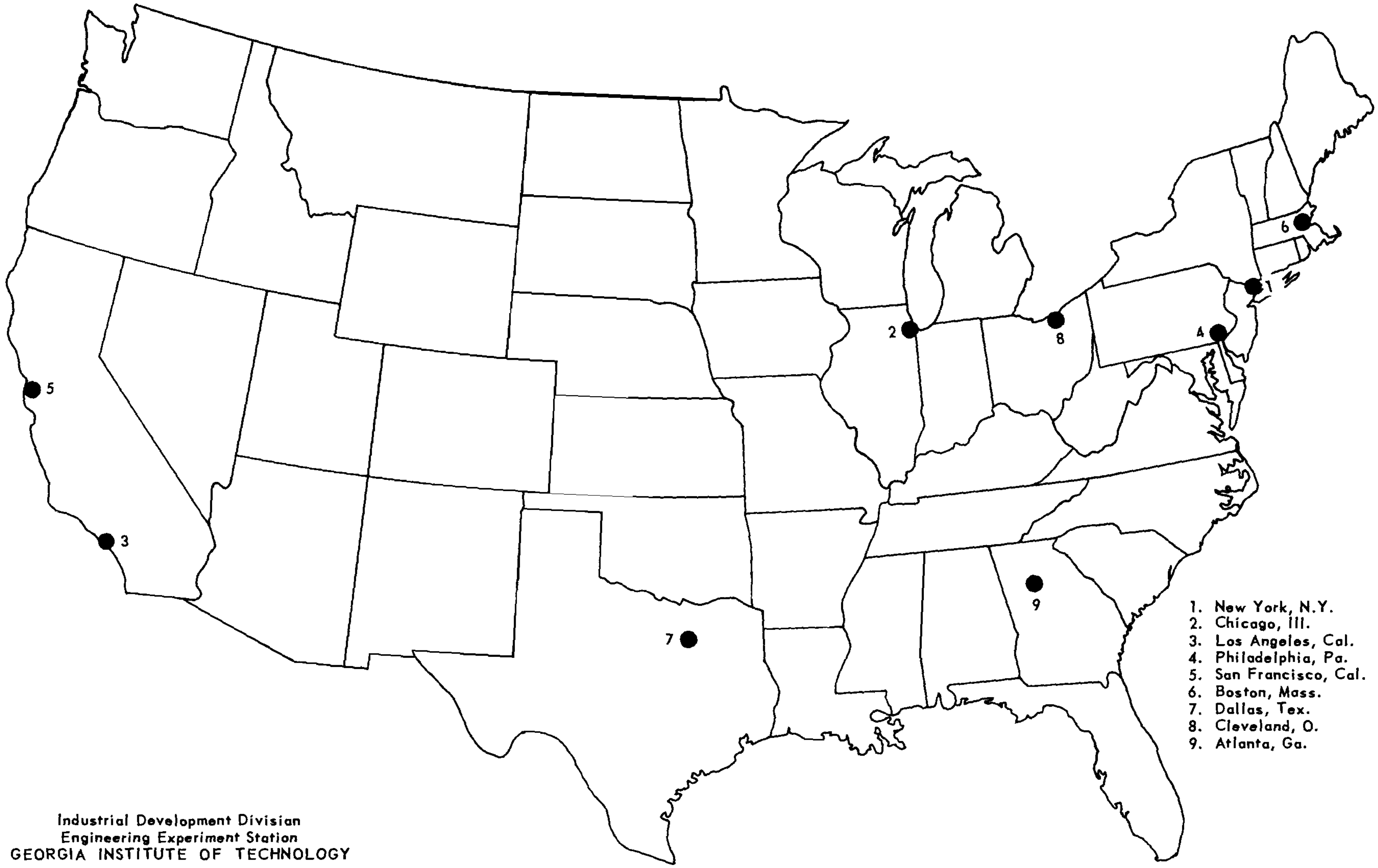
(in millions of dollars)

| City | Sales |
|---|---|
| ATLANTA | 33.6 |
| Miami | 6.9 |
| Memphis | 4.3 |
| Nashville | 3.5 |
| Birmingham | 3.4 |
| Jacksonville | 3.0 |
| Durham | 2.1 |

Source: U. S. Bureau of the Census, 1958 Census of Business -- Wholesale Trade

MAP 3

PRINCIPAL U.S. WHOLESALE CENTERS FOR HOME FURNISHINGS AND FLOOR COVERINGS

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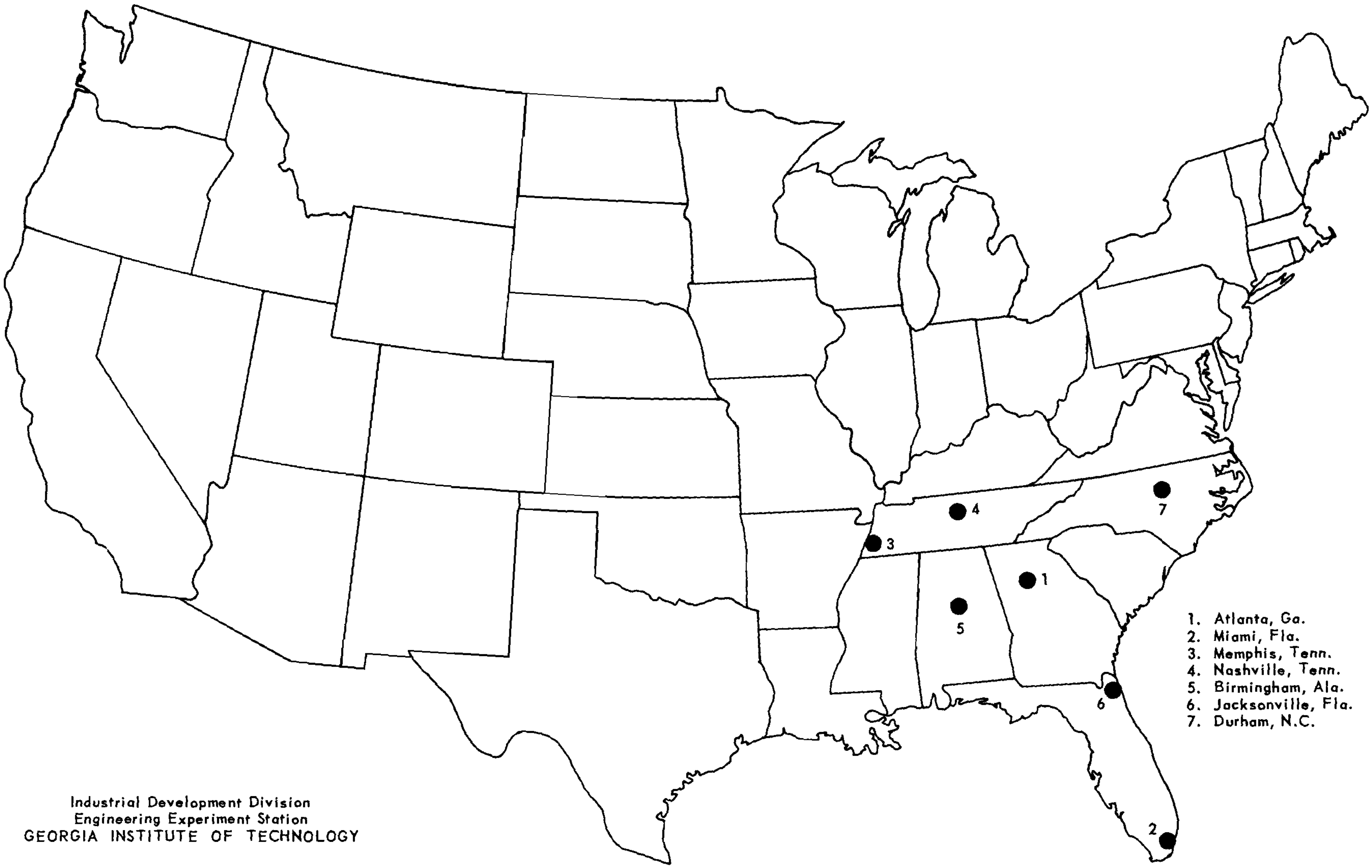
MAP 4

PRINCIPAL SOUTHEASTERN WHOLESALE CENTERS FOR HOME FURNISHINGS AND FLOOR COVERINGS

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## ADVANTAGES OF A CARROLL COUNTY LOCATION

An established market for asphalt and vinyl asbestos tile exists in the six southeastern states. Tiles for this market are produced primarily by plants in the Chicago, New York, and New Orleans areas and are shipped into the Southeast by truck.

An asphalt and vinyl asbestos tile manufacturer in Carroll County can supply and service the southeastern market more economically and efficiently than existing plants because of:

1. lower freight costs,
2. lower production labor costs,
3. faster delivery time,
4. available high quality labor,
5. less likelihood of work stoppages, and
6. Area Redevelopment Administration financing and service.

### Freight Savings

Asphalt and vinyl asbestos tiles are shipped into the Southeast priced f.o.b. point of origin, with freight cost equalized with the closest manufacturing plant to the city of destination. Freight costs can amount to almost one cent per tile, or 15% of the value of shipments.

A manufacturer of floor tile located in Carrollton, Georgia, and selling to the southeastern market would enjoy substantial freight savings over present producers supplying the same area. The delivery costs from Carrollton would be 59% less than those from Chicago, 58% less than from New York, and 28% less than from New Orleans. (See Appendix 3.)

A total of 180 million square yards of asphalt and vinyl asbestos floor tile, valued at approximately $172 million, was shipped by U. S. manufacturers in 1961.[1/] At these prices, a truckload of 2,500 square yards, or 30,000 pounds, would be worth $2,400. Therefore, a plant shipping $2 million in floor tile would dispatch 830 truckloads during the year. If it is assumed that plants in Chicago, New York, New Orleans, and Carrollton shipped the same volume (830 truckloads) of finished products to the same destinations

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1/ U. S. Bureau of the Census, Annual Survey of Manufactures, 1961.

in the Southeast, comparative annual freight costs may be calculated by multiplying the average rates to the Southeast from each producing city (Appendix 3) by size (hundreds of pounds) and number of truckloads as follows:

| | |
|---|---|
| Chicago | $1.21 x 300 x 830 = $301,290 |
| New York | $1.17 x 300 x 830 = $291,330 |
| New Orleans | $0.68 x 300 x 830 = $169,320 |
| Carrollton | $0.49 x 300 x 830 = $122,010 |

A Carrollton manufacturer shipping $2 million worth of asphalt and vinyl asbestos tile in the Southeast, therefore, would have a freight advantage of approximately $179,000 over a Chicago manufacturer, $169,000 over a New York manufacturer, and $47,000 over a New Orleans manufacturer.

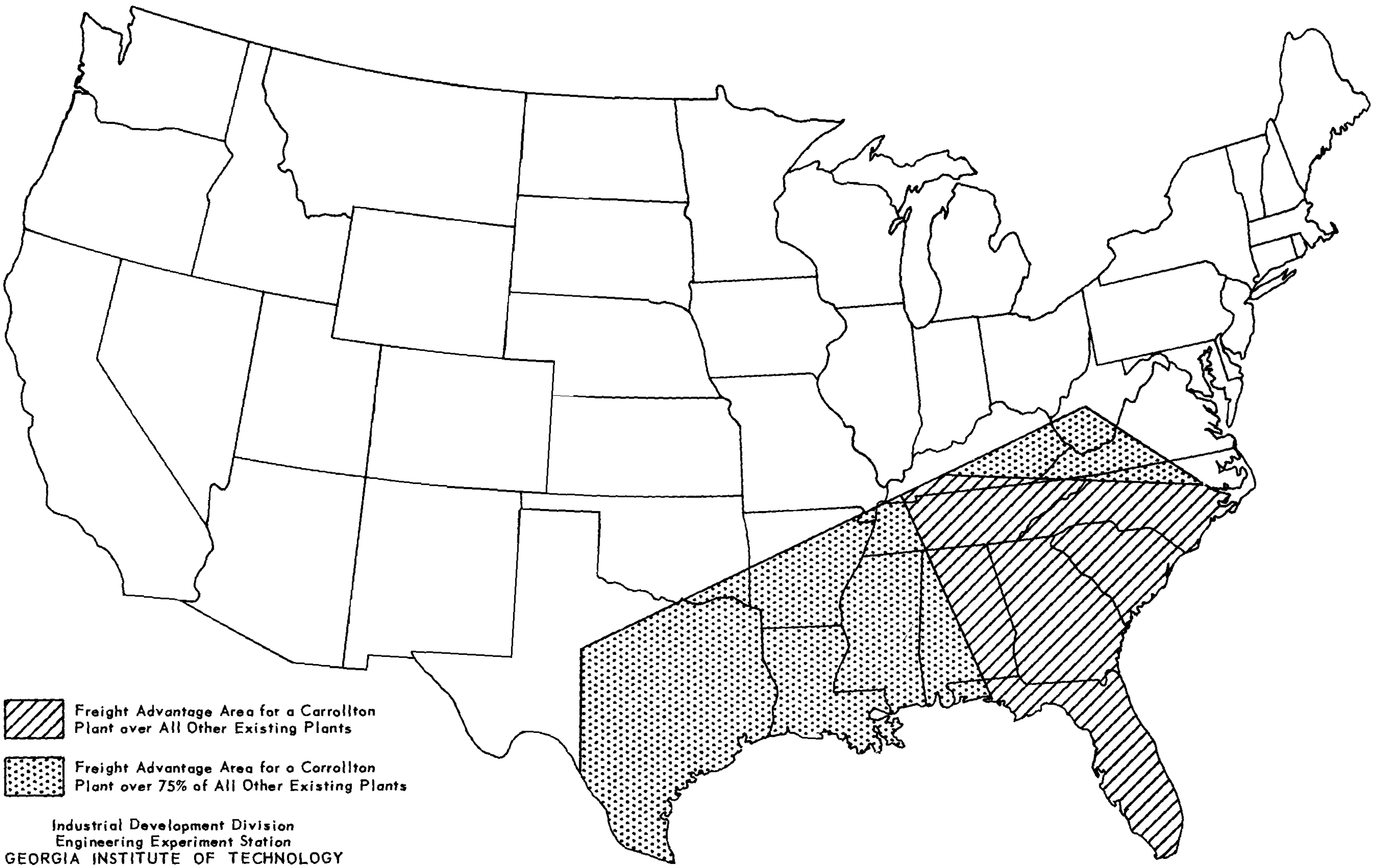
The freight savings on finished products of a Carrollton manufacturer would be offset to some degree by additional transportation costs on some raw materials, but the net savings still would be substantial. Fillers (clay, ground limestone, or ground sand plus asbestos) constitute the bulk of raw materials used in manufacturing asphalt and vinyl asbestos tile. All of these except asbestos are readily available in Georgia. Asbestos can be shipped to Carrollton from Asbestos, Canada, by rail. The binder (coumarone-indene resins or vinyl resins) can be shipped from Florida, Pennsylvania, and Illinois by rail or truck.

The freight cost to Carrollton for asbestos and binder is the same as that to New Orleans, but is approximately $75,000 more than the freight cost to Chicago or New York. Therefore, the net freight savings for a Carrollton manufacturer shipping $2 million worth of asphalt and vinyl asbestos tile in the Southeast would be $104,000 over a manufacturer in Chicago, $94,000 over one in New York, and $47,000 over a New Orleans producer.

The area in which a Carrollton manufacturer would have a freight advantage over all existing plants covers all or a major portion of Alabama, Florida, Georgia, North Carolina, South Carolina, and Tennessee, as well as a small section of Kentucky. This freight advantage is maintained over 75% of all existing plants even when the shipping area is extended to 15 states bounded on the north and west by portions of Virginia, West Virginia, Kentucky, Missouri, Arkansas, Oklahoma, and Texas. (See Map 5.) Production savings at a Carrollton plant would allow competitive shipments even beyond the larger freight advantage area.

MAP 5

FREIGHT ADVANTAGE AREA FOR A CARROLLTON ASPHALT AND VINYL ASBESTOS TILE PLANT



Labor Savings

Labor costs of a plant in Carroll County would be significantly lower than those of existing plants which presently serve the Southeast. In 1961 the average hourly wage rates for production workers in manufacturing industries were:[1/]

| | |
|---|---|
| Illinois | $2.52 per hour |
| New York | $2.38 per hour |
| Louisiana | $2.22 per hour |
| Georgia | $1.69 per hour |

These wage rates indicate that average labor costs in Georgia would be 33% less than those in Illinois, 29% less than in New York, and 24% less than in Louisiana.

Production labor costs in asphalt and vinyl asbestos tile plants averaged 12.5% of the value of shipments in 1958.[2/] The labor cost savings of a Georgia manufacturer with annual shipments of $2 million can be roughly estimated by multiplying this average labor cost percentage by the value of shipments and then by Georgia's labor savings percentage over each location as follows:

| | |
|---|---|
| Georgia over Illinois | 0.125 x $2,000,000 x 0.33 = $82,500 |
| Georgia over New York | 0.125 x $2,000,000 x 0.29 = $72,500 |
| Georgia over Louisiana | 0.125 x $2,000,000 x 0.24 = $60,000 |

Actually, the labor savings in Carroll County would be even greater, since Carroll County wage rates are less than the Georgia average, and Chicago, New York, and New Orleans wage rates are more than the averages for their respective states.

Delivery Time Savings

The proximity of Carroll County to Atlanta (the principal city for the wholesaling of floor coverings in the Southeast) and its ideal central location in the region puts Carroll County in a position to supply the needs of the southeastern distributors with dispatch and dependability. Discussions with manufacturers in the county reveal the existence of excellent motor transportation facilities which can provide most of the southeastern floor

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1/ U. S. Department of Labor, Employment and Earnings, June 1962.

2/ U. S. Bureau of the Census, U. S. Census of Manufactures: 1958.

covering market with first morning delivery service. In comparison, the present major supplying cities provide only second morning service.

Labor Availability

In a recent audit and evaluation of manufacturing operations in Carroll County, over 90% of the manufacturers interviewed reported a satisfactory or plentiful supply of local labor.[1/] The majority of these manufacturers also expressed the judgment that the quality of labor was good or, in some cases, excellent. Some specific traits mentioned were dependability, productivity, trainability, and good attitudes. At the time of the survey none of the manufacturing employees in the county were represented by a union.

Work Stoppage Record

In the floor tile industry, where a multi-shift operation is necessary for economical production, work stoppages are exceptionally costly. During 1960 the ratio of work stoppage to total working time in Georgia was 50% less than in Illinois, 75% less than in New York, and 28% less than in Louisiana.[2/] There were no work stoppages in Carroll County during this period.

Area Redevelopment Administration Benefits

Carroll County is an approved Area Redevelopment Administration area, with a Section 5(a) designation. Under this program the Federal government makes available to a manufacturer:

1. low-cost financing for plant and equipment,
2. technical assistance in the form of technical information and market research, and
3. occupational training assistance.

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1/ M. Dale Henson and Robert H. McDonough, Audit and Evaluation of Manufacturing Operations in Carroll County, Georgia, Industrial Development Division, Engineering Experiment Station, Georgia Institute of Technology, Atlanta, Georgia, February 1963, p. 89.

2/ U. S. Department of Labor, 1961 Statistical Supplement -- Monthly Labor Review.

## CONCLUSION

Although there is an expanding market for asphalt and vinyl asbestos floor tile in the Southeast, none is presently manufactured in the area.

An asphalt and vinyl asbestos tile producer located near Atlanta -- the distribution center of the Southeast -- could supply and service the southeastern floor covering distributors more profitably than any present manufacturer, due largely to considerable savings in freight costs.

Carroll County, whose county seat is only 50 miles from Atlanta, offers a prospective tile manufacturer not only time and cost advantages in distributing the finished product, but also significant savings in production labor costs, a large labor pool from which to draw, an excellent labor climate marked by a low work stoppage rate, and ARA financing and service.

A Carroll County manufacturer producing a $2 million annual volume of asphalt and vinyl asbestos floor tile for distribution in the Southeast could save from $107,000 to $186,000 in freight and labor costs each year over present producers serving the same market. This saving is equivalent to an additional profit on sales of from 5% to 9%.

APPENDICES

Appendix 1

CORRELATION BETWEEN CONSUMPTION OF SELECTED HARD SURFACE FLOOR COVERINGS AND RESIDENTIAL AND NONRESIDENTIAL CONSTRUCTION

| Year | X | Y | x (X-A) | y (Y-A) | xy | $x^2$ | $y^2$ |
|---|---|---|---|---|---|---|---|
| 1950 | 245 | 206 | -31 | -84 | 2604 | 961 | 7056 |
| 1951 | 248 | 218 | -28 | -72 | 2016 | 784 | 5184 |
| 1952 | 256 | 227 | -20 | -63 | 1260 | 400 | 3969 |
| 1953 | 261 | 244 | -15 | -46 | 690 | 225 | 2116 |
| 1954 | 250 | 266 | -26 | -24 | 624 | 676 | 576 |
| 1955 | 275 | 308 | - 1 | 18 | - 18 | 1 | 324 |
| 1956 | 273 | 308 | - 3 | 18 | - 54 | 9 | 324 |
| 1957 | 262 | 316 | -14 | 26 | -364 | 196 | 676 |
| 1958 | 296 | 322 | 20 | 32 | 640 | 400 | 1024 |
| 1959 | 342 | 390 | 66 | 100 | 6600 | 4356 | 10000 |
| 1960 | 331 | 382 | 55 | 92 | 5060 | 3025 | 8464 |
| Sum | 3039 | 3187 | | | 19058 | 11033 | 39389 |
| Average (A) | 276 | 290 | | | | | |

Number (N) = 11

$$\sigma_x = \sqrt{\frac{\Sigma x^2}{N}} = \sqrt{\frac{11033}{11}} = \sqrt{1003} = 32$$

$$\sigma_y = \sqrt{\frac{\Sigma y^2}{N}} = \sqrt{\frac{39389}{11}} = \sqrt{3581} = 60$$

$$\text{Coefficient:} \quad r = \frac{\Sigma xy}{N\sigma_x\sigma_y} = \frac{19058}{11(32)(60)} = \frac{19058}{21120} = 0.90$$

Note: X = Selected hard surface floor coverings (linoleum, asphalt and vinyl asbestos tiles, and felt-base).

Y = Residential and nonresidential construction.

Appendix 2

SALES OF FLOOR COVERINGS IN THE SOUTHEAST BY KIND OF WHOLESALER

| | A | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kind of Wholesaler | Ala. | Fla. | Ga. | N.C. | S.C. | Tenn. | B | x C = | D | x E = | | F |
| Paint and Varnish | 4.9 | 17.4 | 26.7 | 13.8 | 3.6 | 11.7 | 78.1 | 70 | 54.7 | .7 | | 383 |
| Allied Chemicals | 63.9 | 44.6 | 223.8 | 342.6 | 10.9 | 226.8 | 912.6 | 70 | 638.8 | .1 | | 639 |
| Dry Goods | 16.7 | 58.0 | 105.9 | 87.9 | 14.8 | 49.1 | 332.4 | 72 | 239.3 | .1 | | 239 |
| Apparel | 15.1 | 31.1 | 101.1 | 59.0 | 10.0 | 83.9 | 300.2 | 70 | 210.1 | .3 | | 630 |
| Electrical Supplies | 91.4 | 208.8 | 291.8 | 147.8 | 23.8 | 157.9 | 921.5 | 76 | 700.3 | .1 | | 700 |
| Electrical Appliances | 44.5 | 117.6 | 85.9 | 69.6 | 18.4 | 74.0 | 410.0 | 82 | 336.2 | .7 | | 2,354 |
| Hardware | 69.3 | 62.3 | 49.4 | 40.6 | 16.8 | 92.3 | 330.7 | 75 | 248.0 | 1.4 | | 3,472 |
| Plumbing and Heating | 43.6 | 104.4 | 85.8 | 69.1 | 19.3 | 60.1 | 382.3 | 75 | 286.7 | .1 | | 287 |
| Paper | 3.4 | 19.4 | 8.4 | 21.6 | - | 23.4 | 76.2 | 81 | 61.7 | .4 | | 247 |
| Paper Products | 17.7 | 23.0 | 76.2 | 25.9 | 6.6 | 90.2 | 239.6 | 70 | 167.7 | .1 | | 168 |
| Furniture | 10.1 | 42.7 | 17.5 | 60.7 | 7.1 | 13.8 | 151.9 | 73 | 110.9 | 1.7 | | 1,885 |
| Home Furnishings | 14.5 | 37.3 | 98.9 | 20.7 | 4.3 | 23.8 | 199.5 | 75 | 149.6 | 44.0 | | 65,824 |
| Lumber | 81.4 | 132.9 | 86.3 | 119.5 | 33.6 | 81.9 | 535.6 | 70 | 374.9 | .1 | | 375 |
| Construction Materials | 104.8 | 165.6 | 137.2 | 61.6 | 23.7 | 63.2 | 556.1 | 70 | 389.3 | .4 | | 1,557 |
| TOTAL | | | | | | | | | | | | 78,760 |

Explanation of Column Headings:

A = Wholesale sales by states (in millions of dollars)
B = Total southeastern wholesale sales (in millions of dollars)
C = Ratio of specified sales to total sales (in percentages)
D = Sales of specified items (in millions of dollars)
E = Ratio of floor covering sales to total specified sales (in percentages)
F = Sales of floor coverings in the Southeast (in thousands of dollars)

SOURCE: U. S. Census of Business: 1958, Bureau of the Census, U. S. Department of Commerce

Appendix 3

## FREIGHT SAVINGS ON SHIPMENTS OF ASPHALT AND VINYL ASBESTOS FLOOR TILE FROM CARROLLTON TO SOUTHEASTERN WHOLESALERS

(in cents per 100 pounds)

| TO: | Minimum Truckload (30,000 lbs.) Commodity Rates from: Carrollton | Chicago | New York | New Orleans | FEP | City's Share of Shipments (%) | Proportionate Share of Minimum Truckload Commodity Rates from: Carrollton | Chicago | New York | New Orleans | FEP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Atlanta | 38* | 115 | 95 | 62 | 58 | 59.1 | 22.5 | 68.0 | 56.1 | 36.6 | 34.3 |
| Birmingham | 57* | 103 | 125 | 53 | 45 | 6.0 | 3.4 | 6.2 | 7.5 | 3.2 | 2.7 |
| Durham | 102* | 130 | 70 | 99 | 66 | 3.7 | 3.8 | 4.8 | 2.6 | 3.7 | 2.4 |
| Jacksonville | 88* | 157 | 153 | 81 | 81 | 5.3 | 4.7 | 8.3 | 8.1 | 4.3 | 4.3 |
| Memphis | 90* | 77 | 146 | 56 | 42 | 7.6 | 6.8 | 5.9 | 11.1 | 4.3 | 3.2 |
| Miami | 125* | 192 | 200 | 100 | 100 | 12.1 | 15.1 | 23.2 | 24.2 | 12.1 | 12.1 |
| Nashville | 80* | 77 | 126 | 66 | 58 | 6.2 | 5.0 | 4.8 | 7.8 | 4.1 | 3.6 |
| | | | | | | Average Rates to Southeast: | 61.3* | 121.2 | 117.4 | 68.3 | 62.6 |

* - Class rates

To approximate Carrollton commodity rates, decrease class rates by 20%: 61.3 x 0.80 = 49.0 (average commodity rate from Carrollton to Southeast).

To compute Carrollton freight savings:

Over Chicago $\frac{121.2 - 49.0}{121.2} = 59.6\%$ Over New Orleans $\frac{68.3 - 49.0}{68.3} = 28.3\%$

Over New York $\frac{117.4 - 49.0}{117.4} = 58.3\%$ Over FEP $\frac{62.6 - 49.0}{62.6} = 21.7\%$

Notes:

FEP -- Closest freight equalization point: Jackson, Mississippi; New Orleans, Louisiana; or Lancaster, Pennsylvania.

Shipments to the seven southeastern cities which wholesale the largest volume of floor coverings were chosen as being representative of shipments to the entire Southeast. Each city's per cent of the group's total wholesale volume was used to calculate the average cost to that city.